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EXAMINER

STAHL, MICHAEL J

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/597,088	Applicant(s) JACOBS ET AL.	
	Examiner MICHAEL STAHL	Art Unit 2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-3,7,9-18,20-25,27 and 29-39 is/are rejected.
- 7) ☒ Claim(s) 4-6,8,12,19,26 and 28 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>7/11/06</u> . | 6) <input type="checkbox"/> Other: ____. |

Specification

The specification is objected to for containing the following apparent typographical errors:

At [65], ln. 1, “agdividedh” should be changed to “a divided”.

At [65], ln. 5, “gline sourcesh” should be changed to “line sources”.

At [77], ln. 4 “thegline sourcesh” should be changed to “the line sources”.

At [79], ln. 3, “agfeed-inh” should be changed to “a feed-in”.

At [95], ln. 7, “theglandscapeh” should be changed to “the landscape”.

At [96], ln. 3, “thegportraith” should be changed to “the portrait”.

At [122], ln. 3, “theglandscapeh” should be changed to “the landscape”.

At [123], ln. 3, “thegportraith” should be changed to “the portrait”.

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed (MPEP 606.01). Examiner suggests the following title: “Display Including Backlight Operable in 2D and 3D Modes”.

Claim Objections

Claim 12 is objected to for failing to further limit claim 7 as required by 37 CFR 1.75(c). It is unclear what is the difference between a waveguide and a light guide. Clarification or cancellation of claim 12 is required.

Claim 26 is objected to because in line 6, “third” should be changed to “second” (note line 4).

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 10-11 and 21-22 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claims contain subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claims 10 and 11 recite that the backlight includes first and second light guides. This appears to correspond generally to figs. 2-3. However, parent claim 4 recites directional scatterers which were described in connection with fig. 7. [73] specifically refers to the backlight as having an undivided light guide structure. The separately controllable light emitting regions of the fig. 7 embodiment are defined by the use of two different types of directional scatterers on a surface of a single light guide, which is structurally different from using two different light guides as in the figs. 2-3 embodiment. The disclosure has not explained how to combine the directional scatterers with two different light guides within a single embodiment, and so it appears that undue experimentation would be required for a skilled person to do so.

Claim 21 recites that the backlight includes a first fluorescent material to form the first regions (i.e., the first regions mentioned in claim 1) and a UV light source to illuminate the fluorescent material (corresponding generally to fig. 10). However, this claim depends from claim 4 which recites a completely different structure to define the first regions. The disclosure has not explained how to combine the directional scatterers with fluorescent material and a UV

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light source within a single embodiment, and so it appears that undue experimentation would be required for a skilled person to do so.

Claim 22 is rejected by inheritance from claim 21.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 27 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 27 recites that first and third regions are disposed in first and second planes which are spaced apart in a direction of light output. However, parent claim 25 recites that the first and third regions are part of the at least one portion, i.e. the at least one portion of the light-output surface of the backlight as defined in parent claim 1. The light-output surface of the backlight of claim 1 appears to occupy only one plane. Therefore claim 27 appears to be inconsistent with claim 1 since it is not clear how the first and third regions could both be part of the light-output surface of the backlight, and yet lie in different planes in the light output direction.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 25, and 29-39 are rejected under 35 U.S.C. 102(b) as being anticipated by Bhagavatula et al. (US 6137456, cited in information disclosure statement).

Claim 1: Bhagavatula discloses a display comprising a backlight **10** and a spatial light modulator **36** for modulating light from the backlight, the backlight having a light-output surface **12**, at least one portion of which comprises a plurality of first regions arranged to output light in a multiple-view (3D) mode of the display, the whole of the at least one portion being arranged to output light in a single-view (2D) mode of the display. See figs. 1-2. In particular, the first regions are regarded as those regions of the light-output surface **12** which are located opposite to regions of the blocking module **18** which are bordered by electrodes **28** (in fig. 2). In 3D mode only the light from the first regions passes through the blocking module **18**, while in 2D mode all of the light from light-output surface **12** is transmitted (col. 5 lns. 4-37). It is noted that the whole surface **12** of backlight **10** actually emits light in both the 3D and 2D modes; however, claim 1 as written does not require that only the first regions output light in the 3D mode.

Claim 2: The at least one portion comprises a plurality of second regions with the first and second regions arranged to output light alternately with the first regions for temporal multiplexing of views in the 3D mode (fig. 6; col. 6 lns. 10-31). In this embodiment the first regions and the second regions are regarded as regions of the light-output surface **12** which are opposite to regions between electrodes **28** attached to bus **26a**, or between electrodes **28** which are attached to bus **26b**, respectively.

Claim 3: The at least one portion comprises a plurality of second regions with the first and second regions being independently controllable to emit light for observer tracking in the 3D mode (fig. 6; col. 6 lns. 10-31). In this embodiment the first regions and the second regions are

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regarded as regions of the light-output surface **12** which are opposite to regions between electrodes **28** attached to bus **26a**, or between electrodes **28** which are attached to bus **26b**, respectively.

Claim 25: The at least one portion comprises a plurality of third regions arranged to output light in a further 3D mode of the display (see e.g. col. 6 lns. 35 - col. 7 ln. 8).

Claim 29: The display includes an array **74** of lenses at the first regions.

Claim 30: The at least one portion comprises a plurality of second regions arranged to output light in the 3D mode. Since this claim recites no structural distinction between the first and second regions, odd-numbered and even-numbered ones of the regions mentioned above with regard to parent claim 1 can be re-designated as first regions and second regions, respectively.

Claim 31: The display includes an array **74** of lenses, with each lens of the array being arranged to receive light from at least one first region and at least one second region and to direct the received light in first and second different directions respectively towards the spatial light modulator **36**.

Claim 32: The first and second regions are arranged to output light simultaneously in the 2D mode of the display.

Claim 33: See above with regard to claim 25.

Claim 34: All the regions are arranged to output light simultaneously in the 2D mode of the display.

Claim 35: The first regions are elongate.

Claim 36: The first regions are substantially parallel.

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Claim 37: The first regions are substantially uniformly spaced apart (there is a space “W” between them as shown in fig. 2).

Claim 38: The spatial light modulator **36** has a transmissive mode of operation.

Claim 39: The spatial light modulator **36** is a liquid crystal device.

Claims 1-3, 7, 9, 12-17, 25, 30, and 35-39 are rejected under 35 U.S.C. 102(b) as being anticipated by Appeldorn et al. (US 5432876).

Claim 1: Appeldorn discloses a display comprising a backlight and a spatial light modulator **50** for modulating light from the backlight, the backlight having a light-output surface (output surface of the group of fibers **48**; also see wall **8** in fig. 1), at least one portion of which comprises a plurality of first regions (output surfaces of the fibers carrying red light) arranged to output light in a multiple-view (3D) mode of the display, the whole of the at least one portion (i.e. the output surface of all the fibers of array **46**) being arranged to output light in a single-view (2D) mode of the display. See mainly figs. 1 and 10. Claim 1 refers to “arranged to output light in a multiple-view mode of the display” and “arranged to output light in a single-view mode of the display”. As presently phrased, these are regarded as functional limitations. The Appeldorn device meets all the structural limitations of claim 1 and thus this rejection is regarded as being consistent with the advice of MPEP 2114. It is also noted that the Appeldorn device could be operated in a 3D or 2D mode (albeit in only one color for 3D mode), since every fiber provides a linear light source and a single color group including every third fiber would correspond to the first regions disclosed by this application.

Claim 2: The at least one portion comprises a plurality of second regions (output

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surfaces of fibers carrying green light) with the first and second regions arranged to output light alternately with the first regions for temporal multiplexing of views in the 3D mode.

Claim 3: The at least one portion comprises a plurality of second regions (output surfaces of fibers carrying green light) with the first and second regions being independently controllable to emit light for observer tracking in the 3D mode. They are independently controllable by turning on or off the red or green light sources.

Claim 7: The backlight comprises: a first light guide (the group of fibers carrying red light) having the first regions; a first visible light source for supplying light to the first light guide (a red light source, not shown but inherently present since fibers are not self-luminous; also note col. 5 lns. 62-68); a second light guide (the group of fibers carrying green light) having a remainder of the at least one portion; and a second visible light source (a green light source) for supplying light to the second light guide. It is noted that “at least one portion” as recited in parent claim 1 does not automatically mean the entire light-output surface of the backlight, so that “remainder of the at least one portion” does not need to include the fibers carrying blue light.

Claim 9: In one embodiment, the first light guide is disposed on an output surface of the second light guide (fig. 9a).

Claim 12: Each of the first and second light guides comprises at least one waveguide (an optical fiber is a waveguide).

Claim 13: Each of the first and second light guides comprises a plurality of optical fibers
48.

Claims 14-15: The first and second light guides are separated from each other by a material of lower index, i.e. air.

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Claims 16-17: Non-input and non-output surfaces of the first and second waveguides are at least partially covered by a non-transmissive material, which is reflective (col. 11 lns. 52-60).

Claim 25: The at least one portion comprises a plurality of third regions (fibers carrying blue light) arranged to output light in a further 3D mode of the display.

Claim 30: The at least one portion comprises a plurality of second regions arranged to output light in the 3D mode. Since this claim recites no structural distinction between the first and second regions, odd-numbered and even-numbered ones of the regions mentioned above with regard to parent claim 1 can be re-designated as first regions and second regions, respectively.

Claim 35: The first regions are elongate.

Claim 36: The first regions are substantially parallel.

Claim 37: The first regions are substantially uniformly spaced apart.

Claim 38: The spatial light modulator **50** has a transmissive mode of operation.

Claim 39: The spatial light modulator **50** is a liquid crystal device.

Claim Rejections - 35 USC § 103

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c)

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and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 18, 20, and 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bhagavatula (applied above) in view of Ohta et al. (US 4678285).

Claim 18: Bhagavatula does not specifically disclose that the backlight includes a light guide, a visible light source for supplying light to the light guide, first fluorescent material forming the first regions, and a first ultraviolet light source for illuminating the fluorescent material. Ohta discloses a backlight including a light guide **7**, a visible light source (part of fluorescent material **71** which emits red), first fluorescent material forming the first regions (another part of fluorescent material **71** which emits green), and a first UV source **8** (fig. 1). Plate **7** is fairly construed as a light guide because it is transparent and has a higher refractive index than the surrounding material (air). The backlight provided by Ohta usefully emits light of multiple colors (e.g. red, green, blue) while the Bhagavatula backlight is apparently colorless. A skilled person at the time of the invention could have used a color-emitting backlight such as the Ohta backlight in the Bhagavatula display and the results would have been predictable. Thus it would have been obvious to a skilled person at the time the invention was made to do so. A motivation would have been the desire to provide a more informative and/or more attractive display as compared with a monochrome display. Note in the proposed combination the light-

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output surface is now the emitting surface of the whole fluorescent layer **71** of the Ohta backlight, and the first regions are the green-emitting regions of the Ohta backlight.

Claim 20: In an alternate embodiment of the Ohta backlight (fig. 17), a color filter **42** is used to improve the spectral purity of the fluorescent emission of respective colors. Each color filter blocks UV as shown in figs. 29A-31B.

Claim 23: The first fluorescent material is dispersed in a visible light scattering medium (col. 9 ln. 40 - col. 10 ln. 2).

Claim 24: In an alternate embodiment of the Ohta backlight (figs. 12-13), the first fluorescent material of each first region is arranged to emit light of two color components.

Allowable Subject Matter

Claims 4-6, 8, 19, 26, and 28 are objected to for depending from rejected parent claims, but would be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claims (and for claim 26, if the informality objection above is resolved). As to claim 4, the prior art of record does not disclose or suggest first regions comprising first light-redirecting elements adapted to redirect toward the SLM light traveling in a first direction but not a second direction, the remainder of the at least one portion comprising second light-redirecting elements adapted to redirect toward the SLM light going in the second direction but not the first, in combination with all the limitations of claim 1. It is noted that US 2005/0276071 discloses light redirecting elements **32a** and **32b** (fig. 4) which affect light received from only one of two light sources **1a** and **1b**, but these elements are not on a light-output surface as parent claim 1 requires. Claims 5-6 depend from claim 4. As to claim 8,

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Appeldorn is the only reference applied to parent claim 7 but it does not disclose or suggest that the first light guide has a higher refractive index than the second light guide. There is no apparent motivation to use fibers with different refractive indices in that reference. As to claim 19, the combination of Bhagavatula and Ohta does not disclose or suggest the recited type and location of filter material, in combination with all the features of the parent claims. As to claim 26, the combination of Bhagavatula and Ohta does not disclose or suggest a second UV source emitting a second wavelength which causes the second fluorescent material to fluoresce, in combination with all the limitations of the parent claims. All the fluorescent materials in Ohta respond to the same wavelength, and there is no apparent motivation to include an additional UV source. As to claim 28, the applied references fail to disclose or suggest that the first and third regions extend in orthogonal directions, in combination with all the limitations of the parent claims.

Conclusion

The additional references listed on the attached 892 form are relevant to the subject matter of this application. Generally they disclose displays having 2D and 3D modes.

Inquiries about this letter may be directed to examiner Stahl at 571-272-2360. Inquiries of a general or clerical nature (e.g., a request for a missing form or paper, etc.) should be directed to the technical support staff supervisor at 571-272-1626. Official correspondence which is eligible for submission by facsimile and which pertains to this application may be faxed to 571-273-8300. Information regarding the status of an application may be obtained from the Patent

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/Mike Stahl/
Primary Examiner, Art Unit 2874

March 27, 2010